AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (currently amended): A plasma processing apparatus for plasmatizing a processing gas in a discharge space ~~under a pressure in the vicinity of atmospheric pressure~~ and jetting the plasmatized gas so as to be contacted to a workpiece to be processed, said apparatus comprising:

a first electrode row including a plurality of electrode members each being elongate in an extending direction and short in a short direction orthogonal to the extending direction and arranged in a line in the extending direction;

a second electrode row including another plurality of electrode members each being elongate in the extending direction and short in the short direction and arranged in a line parallel with said first electrode row;

one of said electrode members of said first electrode row and one of said electrode members of said second electrode rows, which are arranged in substantially same positions in the extending direction, having opposite polarities and forming a row-to-row partial gap therebetween, said row-to-row partial gap serving as a part of said discharge space, one of said polarities being an electric field applying pole, the other of said polarities being a grounding pole,

a row-to-row gap including said row-to-row partial gap formed between said first and second electrode rows, an introduction port of the processing gas communicated with a side in a

flowing direction orthogonal to the extending and short directions of said row-to-row gap, a jet port communicated with a side opposite to the introduction port of said row-to-row gap; and

a ~~conveyor~~ supporter that ~~relatively passes~~ supports said workpiece ~~through outside of~~ while said workpiece is separated from said discharge space ~~under said pressure in the vicinity of atmospheric pressure~~ to outside in ~~a~~ the flowing direction ~~intersecting with the extending and flowing directions~~ during the jetting of the plasmatized gas and also while said workpiece is separated from the jet port at a distance to outside in the flowing direction during the jetting of the plasmatized gas, a length, in the short direction, of each of the two electrode members which are arranged in substantially same positions in the extending direction being larger than the distance, a length, in the extending direction, of each of the two electrode members being further larger than the distance.

2. (previously presented): A plasma processing apparatus according to claim 1, wherein those of said electrode members constituting said electric field applying pole being connected to different power sources, respectively.

3. (previously presented): A plasma processing apparatus according to claim 1, wherein only those of said electrode members constituting said electric field applying pole being connected to a common power source.

4. (currently amended): A plasma processing apparatus for plasmatizing a processing gas in a discharge space ~~under a pressure in the vicinity of atmospheric pressure~~ and jetting the plasmatized gas so as to be contacted to a workpiece to be processed, said apparatus comprising:

a first electrode row including a plurality of electrode members each being elongate in an extending direction and short in a short direction orthogonal to the extending direction and arranged in a line in the extending direction;

a second electrode row including another plurality of electrode members each being elongate in the extending direction and short in the short direction and arranged in a line parallel with said first electrode row;

one of said electrode members of said first electrode row and one of said electrode members of said second electrode rows, which are arranged in substantially same positions in the extending direction, having opposite polarities and forming a row-to-row partial gap therebetween, said row-to-row partial gap serving as a part of said discharge space, one of said polarities being an electric field applying pole, the other of said polarities being a grounded pole,

a row-to-row gap including said row-to-row partial gap formed between said first and second electrode rows,

two of said electrode members of each of said electrode rows arranged adjacent to each other in said extending direction being opposite in polarity with respect to each other, an introduction port of the processing gas communicated with a side in a flowing direction orthogonal to the extending and short directions of said row-to-row gap, a jet port communicated with a side opposite to the introduction port of said row-to-row gap; and

a ~~conveyor~~ supporter that ~~relatively passes~~ supports said workpiece ~~through outside of~~ while said workpiece is separated from said discharge space ~~under said pressure in the vicinity of atmospheric pressure~~ to outside in ~~a~~ the flowing direction ~~intersecting with the extending and flowing directions~~ during the jetting of the plasmatized gas and also while said workpiece is separated from the jet port at a distance to outside in the flowing direction during the jetting of the plasmatized gas, a length, in the short direction, of each of the two electrode members which are arranged in substantially same positions in the extending direction being larger than the distance, a length, in the extending direction, of each of the two electrode members being further larger than the distance.

5. (previously presented): A plasma processing apparatus according to claim 4, wherein an in-row gap is formed between two of said electrode members arranged adjacent to each other in said extending direction in said first electrode row and/or said second electrode row, said in-row gap also forming a part of said discharge space.

6. (previously presented): A plasma processing apparatus according to claim 5, wherein one of said two electrode members includes a first surface forming said row-to-row gap and a second surface disposed at an angle with respect to said first surface, and the other of said two electrode members includes a third surface generally flush with said first surface and forming said row-to-row gap and a fourth surface placed opposite to said second surface and arranged at

an angle with respect to said third surface, said in-row gap being formed between said second surface and said fourth surface.

7. (previously presented): A plasma processing apparatus according to claim 6, wherein said first surface and second surface form an obtuse angle and said third surface and fourth surface form an acute angle, said in-row gap being in a slantwise relation with said row-to-row gap.

8. (previously presented): A plasma processing apparatus according to claim 7, wherein corners on the side of the obtuse angle formed between said first surface and second surface are R-chamfered with a relatively large radius of curvature, while corners on the side of the acute angle formed between said third surface and fourth surface are R-chamfered with a relatively small radius of curvature.

9. (previously presented): A plasma processing apparatus according to claim 7, wherein in said electrode row on the opposite side of said electrode row having said first surface, said electrode member located in the substantially same position as said electrode member having said first surface is arranged astride said first surface and the end face of said third surface.

10. (previously presented): A plasma processing apparatus according to claim 7, wherein the downstream end of said in-row gap is open in such a manner as to be able to jet a processing gas therefrom and without passing the processing gas through said row-to-row gap.

11. (currently amended): A plasma processing apparatus for plasmatizing a processing gas in a discharge space ~~under a pressure in the vicinity of atmospheric pressure~~ and jetting the plasmatized gas so as to be contacted to a workpiece to be processed, said apparatus comprising:

a first electrode row including a plurality of electrode members each being elongate in an extending direction and short in a short direction orthogonal to the extending direction and arranged in a line in the extending direction;

a second electrode row including another plurality of electrode members each being elongate in the extending direction and short in the short direction and arranged in a line parallel with said first electrode row;

one of said electrode members of said first electrode row and one of said electrode members of said second electrode rows, which are arranged in substantially same positions in the extending direction, having opposite polarities and forming a row-to-row partial gap therebetween, said row-to-row partial gap serving as a part of said discharge space, one of said polarities being an electric field applying pole, the other of said polarities being a grounding pole;

a row-to-row gap including said row-to-row partial gap formed between said first and second electrode rows, an introduction port of the processing gas communicated with a side in a

flowing direction orthogonal to the extending and short directions of said row-to-row gap, a jet port communicated with a side opposite to the introduction port of said row-to-row gap,

two of said electrode members of each of said electrode rows arranged adjacent to each other in said extending direction being same in polarity with respect to each other, and

a ~~conveyor~~ supporter that ~~relatively passes~~ supports said workpiece ~~through outside of~~ while said workpiece is separated from said discharge space ~~under said pressure in the vicinity of atmospheric pressure~~ to outside in ~~a~~ the flowing direction ~~intersecting with the extending and flowing directions~~ during the jetting of the plasmatized gas and also while said workpiece is separated from the jet port at a distance to outside in the flowing direction during the jetting of the plasmatized gas, a length, in the short direction, of each of the two electrode members which are arranged is substantially same positions in the extending direction being larger than the distance, a length, in the extending direction, of each of the two electrode members being further larger than the distance.

12. (currently amended): A plasma processing apparatus according to claim 11, wherein ~~said polarities include an electric field applying pole and a grounding pole, and~~ an insulating partition wall is interposed between two of said electrode members having said electric field applying pole which are adjacent to each other in said extending direction.

13. (withdrawn-previously presented): A plasma processing apparatus according to claim 1, further comprising a gas guide which guides a processing gas flow passing through a border

part between one of said electrode members of said first electrode row and one of said electrode members of said second electrode row which are arranged at a first position in said extending direction so that the processing gas flow is biased toward between another of said electrode members of said first electrode row and another of said electrode members of said second electrode row which are arranged at a second position adjacent to said border part of said first position.

14. (withdrawn-previously presented): A plasma processing apparatus according to claim 13, wherein said gas guide is disposed in the border part and has a gas guiding surface slanted toward said second position.

15. (withdrawn-previously presented): A plasma processing apparatus according to claim 14, wherein said gas guide is provided on a downstream side from said gas guiding surface with a gas return surface slanted in an opposite direction to said gas guiding surface.

16. (withdrawn-currently amended): A plasma processing apparatus according to claim 13, further comprising an introduction part having an introduction port for the ~~process~~ processing gas.

17. (withdrawn-previously presented): A plasma processing apparatus according to claim 16, wherein said introduction port includes a branch port leading to said border part and being disposed toward said second position .

18. (withdrawn-previously presented): A plasma processing apparatus according to claim 16, wherein a flow rectification plate, as said gas guide , slanted toward said second position is received in said introduction port at a position corresponding to said border part .

19. (withdrawn-previously presented): A plasma processing apparatus according to claim 16, wherein said gas guide includes a blocking part blocking a side of said introduction port at the boundary between said first position and said second position and opening a downstream side therefrom.

20. (withdrawn-previously presented): A plasma processing apparatus according to claim 19,

wherein said introduction port has a slit-like configuration extending in said extending direction and disposed astride said first position and said second position, said blocking part being received in said introduction port at a position corresponding to said boundary .

21. (withdrawn-previously presented): A plasma processing apparatus according to claim 19, wherein a spacer having a pair of interposing parts and a connection part for connecting said

interposing parts, one of said interposing parts being sandwiched between said electrode member located at said first position and said electrode member located at said second position in said first electrode row, the other of said interposing parts being sandwiched between said electrode member located at said first position and said electrode member located at said second position in said second electrode row, said connection part, as said blocking part, being arranged close to the end part on said introduction port side of said boundary.

22. (withdrawn-previously presented): A plasma processing apparatus according to claim 13, further comprising a jet part having a jet port,

said gas guide being disposed at said jet part and introducing a processing gas coming from said border part toward said second position.

23. (withdrawn-previously presented): A plasma processing apparatus according to claim 22, wherein said gas guide includes a gas guiding surface inclined toward said second position and is disposed at a position corresponding to said border part in said jet port .

24. (withdrawn-previously presented): A plasma processing apparatus according to claim 22, wherein said gas guide is disposed at a position corresponding to a boundary between said first position and said second position in said jet port , and said gas guide includes a blocking part for blocking a side of said jet port side of said boundary.

25. (withdrawn-previously presented): A plasma processing apparatus according to claim 22, wherein said jet part includes a porous plate dispersing a processing gas coming from said border part.

26. (withdrawn-previously presented): A plasma processing apparatus according to claim 22, wherein a part of said jet port corresponding to a boundary between said first position and said second position is larger in opening width than another part of said jet port corresponding to said first position.

27. (currently amended): A plasma processing apparatus for introducing a processing gas into a discharge space ~~under a pressure in the vicinity of atmospheric pressure~~ from an introduction port, plasmatizing the gas in said discharge space and jetting the plasmatized gas through a jet port so as to be contacted to a workpiece to be processed, said apparatus comprising:

a first electrode row including a plurality of electrode members each being elongate in an extending direction and short in a short direction orthogonal to the extending direction and arranged in line in the extending direction, the extending and short directions being intersecting with a flowing direction toward said jet port from said introduction port;

a second electrode row including another plurality of electrode members each being elongate in the extending direction and short in the short direction and arranged in a line parallel with said first electrode row;

one of said electrode members of said first electrode row and one of said electrode members of said second electrode rows, which are arranged at a first position in said extending direction, having opposite polarities and forming a first row-to-row partial gap therebetween, said first row-to-row partial gap serving as a part of said discharge space, and another of said electrode members of said first electrode row and another of said electrode members of said second electrode rows, which are arranged at a second position adjacent to said first position, having opposite polarities with each other and forming a second row-to-row partial gap therebetween, said second row-to-row partial gap serving as another part of said discharge space, said electrode member which is arranged at the first position in said first electrode row and said electrode member which is arranged at the second position in said first electrode row having opposite polarities each other and forming an in-row gap therebetween, one of said polarities being an electric field applying pole, the other of said polarities being a grounding pole; an introduction part having said introduction port that includes a row-to-row introduction port disposed astride said first row-to-row partial gap and said second row-to-row partial gap and an in-row introduction port directly connected to said in-row gap; and

a ~~conveyor~~ supporter that ~~relatively passes~~ supports said workpiece ~~through outside of~~ while said workpiece is separated from said discharge space ~~under said pressure in the vicinity of atmospheric pressure~~ to outside in ~~a~~ the flowing direction ~~intersecting with the extending and flowing directions~~ during the jetting of the plasmatized gas and also while said workpiece is separated from the jet port at a distance to outside in the flowing direction during the jetting of the plasmatized gas, a length, in the short direction, of each of the two electrode members which

are arranged in substantially same positions in the extending direction being larger than the distance, a length, in the extending direction, of each of the two electrode members being further larger than the distance.

28. (withdrawn): A plasma processing apparatus comprising an electric field applying electrode and a grounding electrode which are placed opposite to each other and form a processing gas path therebetween, a plurality of power source devices for applying an electric field for plasmatizing said processing gas between said electrodes, and a synchronizer which synchronizes said power source devices.

29. (withdrawn): A plasma processing apparatus according to claim 28, wherein said plurality of power source devices each include a rectification path for rectifying a commercial-use AC voltage to a DC voltage, and an inverter for switching the DC voltage after rectification to an AC voltage by a switching element, said synchronizer controlling said inverters for said power source devices such that said inverters are synchronized in switching action with each other.

30. (withdrawn): A plasma processing apparatus according to claim 29, wherein said synchronizer includes a common gate signal output part for said inverters of said power source devices, a gate signal outputted from said gate signal output part being inputted in a gate of said switching element of each of said inverters in parallel.

31. (withdrawn): A plasma processing apparatus according to claim 29, wherein said synchronizer includes a plurality of gate signal output parts which are provided to said inverter of each power source device and a common synchronization signal supply part for said gate signal output parts, a synchronization signal outputted from said synchronization signal supply part being inputted into each of said gate signal output parts in parallel so that in response to input of said synchronization signal, said gate signal output parts each input a gate signal into said gate of said switching element of the corresponding inverter.

32. (withdrawn): A plasma processing apparatus comprising:

an electric field applying electrode including a first and a second divided electrode member;

a grounding electrode for forming a processing gas path between said first and second electric field applying electrodes;

a first power source device for applying an electric field for plasmatizing said processing gas between said first divided electrode member and said grounding electrode;

a second power source device for applying an electric field for plasmatizing said processing gas between said second divided electrode member and said grounding electrode; and

a synchronizer which synchronizes said first and second power source devices.

33. (withdrawn): A plasma processing apparatus according to claim 32, wherein electrostatic capacity between said first divided electrode member and said grounding electrode is larger than that between said second divided electrode member and said grounding electrode, and

said second electrode device is longer in rising/falling time of applied voltage than said first power source device.

34. (withdrawn): A plasma processing apparatus according to claim 32, wherein electrostatic capacity between said first divided electrode member and said grounding electrode is larger than that between said second divided electrode member and said grounding electrode, and

said second divided electrode member is connected with a condenser in parallel.

35. (withdrawn-previously presented): A plasma processing apparatus according to claim 4, further comprising a gas guide which guides a processing gas flow passing through a border part between one of said electrode members of said first electrode row and one of said electrode members of said second electrode row which are arranged at a first position in said extending direction so that the processing gas flow is biased toward between another of said electrode members of said first electrode row and another of said electrode members of said second electrode row which are arranged at a second position adjacent to said border part of said first position.

36. (withdrawn-previously presented): A plasma processing apparatus according to claim 11, further comprising a gas guide which guides a processing gas flow passing through a border part between one of said electrode members of said first electrode row and one of said electrode members of said second electrode row which are arranged at a first position in said extending direction so that the processing gas flow is biased toward between another of said electrode members of said first electrode row and another of said electrode members of said second electrode row which are arranged at a second position adjacent to said border part of said first position.